Chapter 6

Summary

6.1 Conclusions

BMTA is the state-owned enterprise responsible for providing the bus service in Bangkok since 1976. BMTA has a crucial role in daily life of most people who live in Bangkok metropolitan area. Fares of BMTA are regulated to aid low and middle income people transportations. But the administration of BMTA has faced losses since the beginning of its operation. Since then BMTA has not improved its financial status. It has become the inefficient organization. This paper suggests the technical efficiency scores about the inefficient years and companies and they could be used to reduce the excess factors to become more technically efficient.

BMTA is co-operated with private operators. According to the government's privatization policy, the private sector is encouraged to play a greater role in providing bus service, BMTA granted a concession to private operators in some routes. The concessions are determined by the Department of Land Transport. The shares of private operators tend to increase because of the government privatization, BMTA has granted more concession to private operators. Currently, 65% of the bus service in Bangkok is run by the private operators.

This study has estimated the technical efficiency of BMTA and private operators by DEA. The technical efficiency scores suggest the inefficient years of BMTA and private operators to adjust their inputs and outputs to an appropriate level. It will assist the policy maker to design proper policies to alleviate the problem and improve the efficiency of BMTA and the private operators in bus service industry.

The results of number of trips as proxy for output show that the technical efficiency score of BMTA during 1989 – 2007, under VRS model, show the technical efficiency scores are high. The number of trips of each route is controlled by Department of Land Transport. And all operators, BMTA and private operators will try to provide at least 80% of maximum level of trips. Therefore the number of trips may not be appropriate to measure the technical efficiency.

On the other hand, the results of number of passengers as proxy for output interpret that under CRS model, the technical efficiency score of each year becomes lower and show that bus service of BMTA does not operate at the same level as in the case of competition market. The average value of scale efficiency is 0.769. It means that the average technical efficiency score of BMTA is far from the optimal scale by 23.10% even though the TE scores under VRS model are high. Therefore the operation of BMTA is still far beyond that in the case of competitive market.

While technical efficiency scores of BMTA and selected private operators in 2007 show that Union Bus Service Group Company and minibuses are efficient, BMTA, Wangsakarnkij Company and Sahakornsong Thonburi Company are technically inefficient. BMTA is the worst operator in bus service relative to all selected private operators

The average SE is 0.580 (VRS model). It means that in current situation are more far from the competition market 42 %. However, these empirical results suggest only the appropriate level of input and output factors. They cannot help BMTA get out from loss operation.

6.2 Policy Implication

As for the bus providers' improvement target, the empirical results are beneficial to the internal management and enable the policymakers to design proper policies to improve the performance of bus providers. Both BMTA and private will become more efficient and maintain sustainability in the industry. This study can suggest BMTA to use appropriate input factors to be more technically efficient.

BMTA is the state-owned enterprise that is responsible for providing the bus service in Bangkok. Therefore, the improvement of bus service is necessary. The results suggested that BMTA is high technically efficient but BMTA still does not operate at the optimal level. However, the results of private operators also show that they are technically inefficient. This shows that private operators can also improve the technical efficiency.

The scores also show that BMTA could reduce the inputs factors to the proper level to improve this efficiency. BMTA and some private operators have the

capability to improve their efficiency by the percentage of the different between 1 (full score) and the inefficiency scores. The inefficiency scores can imply that BMTA and inefficiency companies should reduce the input or increase the output factor, leading to the following guidelines for improving bus service.

1. The fuel waste problem, especially from old buses, should be solved. BMTA should replace the old buses to the new ones and the type of fuel should be changed from oil to NGV in order to reduce cost as well as pollution.

2. BMTA and inefficient companies can increase the number of trips even though they will use more inputs. This way can increase not only the number of passengers but also fare revenue.

6.3 Limitations of Study

The limitations of this study are as follows:

1. The author aimed to measure the cost efficiency but most of private operators refused to disclose revenue and expenditure data. However, some private operators provided data that can estimate the technical efficiency.

2. The variables employed in this study may be the best proxy to measure the technical efficiency. Revenue may be more proper than the number of trips and the number of passengers. BMTA has collected revenue data. But some private operators do not want to disclose data not only cost but also revenue.

3. The sample of private operators in this study has only 5 companies, which does not cover all bus operators in the industry.

4. The data collection process is obstructed because the addresses to contact the private operators are difficult to acquire.

5. Data from some companies is difficult to acquire and there are data problem and data collection problem which are as following.

- The data in part of the number of buses of Sahakornsong Thonburi Company and Wangsakarnkij Company show the all buses that they are not used for providing services only but also for rent and for replacing the repaired buses.

- The author can collect the data from Union Bus Service Group Company only Rangsit zone. This area is providing bus service two numbers; 29 and 504.
- As for minibuses operators, the data are the average value calculating from all minibus operators in the annual meeting of minibus operators.

6. This study employed non-parametric approach, data envelopment analysis (DEA), to compute technical efficiency. This approach has some drawbacks for example; measurement error and statistical noise that are assumed to be non-existent in this study.

6.4 Suggestions for Further Studies

Some further research can be done as follows

1. Technical efficiency of BMTA, compare these empirical results (DEA method) with other conventional parameters estimation methods such as translog function or stochastic production frontier.

2. To extent this study, these data can be measured by using two-stage DEA. This method can measure with uncontrolled variables.

3. To measure the technical efficiency, more variables such as the number of passenger per trip will be concerned.

4. Cost efficiency of BMTA should be taken into account. Because of the data constraints (from private operators), the further study may use stochastic frontier, instead of DEA. The technical efficiency itself can explain the ability of a firm to minimize input from a given level of outputs, while allocative efficiency can explain the ability of firm to use these inputs in optimal proportion given their prices (cost efficiency is the combination of technical efficiency and allocative efficiency).

5. There may be some problems in collecting private companies' data because some private companies do not want to disclose their information to the public. This is disadvantageous to some studies that require private companies' data such as cost or revenue in order to find the policy for non-profit state-owned

enterprises. The government should improve the way that data of private companies are collected, construct the database of bus transport and disseminate the data to public. This may be helpful for the researchers and people can access to this information.